

Name: \_\_\_\_\_

### Atmosphere Review Points

- Condensation: vapour turning into water droplets
- Wind from pressure differences: air flows from highs (cold, dry air) to lows (warm, moist air) – explain: warm air has the molecules further apart so the air is less dense and lighter making less pressure. Moist air has light water vapour in it that weighs less than the N it pushes out of the way.
- Isobar: line connecting points of equal pressure
- Barometer: instrument that measures air pressure
- Wind veers to the right in the N. Hem. Causing it to flow anti-clockwise around a low (cyclone)
- Winds are named for where they come from
- Relative humidity: amount of water in air compared to how much it can hold. 100% humidity means air is saturated.
- Land and sea breezes occur because water takes longer to absorb and lose heat than land does. Land breeze: wind (bottom of convection cell) comes from cooler land at night and blows out over the water then up and around. Etc.
- Front: the division between two air masses
- Cold front: cold air advances and pushes up the warmer air
- Clouds: cumulus (fluffy cotton balls), stratus (sheetlike layers), cirrus (high thin feathery), nimbostratus (sheetlike layers that are raining), cumulonimbus (thunderclouds, tall cumulus)
- Seasons caused by tilt of Earth's axis
- Greenhouse gases are produced by pollution, volcanic eruptions
- Atmosphere layers diagram – LEARN IT!!
  - Troposphere, stratosphere, mesosphere, thermosphere, divided due to the way the temp changes in each layer (T drops in Trop, alternates in others).
  - Percent of elements in homosphere (up to 80 km) – N 78%, O 21%, other 1%; Heterosphere from 80 km up – made of separate layers of O, He, H
  - Meteors start burning in the thermosphere
  - Ionosphere formed when electrons knocked out of atoms
  - Ozone layer protects us from UV rays – not related to greenhouse effect!
- Climate Controls:
  - Latitude (how far you are from the equator, main determinant of local temperature),
  - Altitude (higher you are in troposphere, the colder it is),
  - Land/Sea Proximity (water takes longer to gain and lose heat so places near an ocean tend to have milder climates),
  - Prevailing winds (areas that have a wind that always blows from one direction will be affected by the weather of where the wind comes from),
  - Topography (mountains can block wind that could affect temperature or stop clouds making the rain fall there),
  - Ocean currents (can bring warmer or colder water into an area and affect the air temperature)

- Tornado (low pressure, narrow, funnel, damage where touch down, 300 mi/hr winds), Hurricanes (low pressure, large storm, forms over warm water, 150mi/hr winds, also called typhoons, cyclones, willie willie, baguios), Thunderstorms (every three seconds between when you see the lightening and hear the thunder means the storm is a km away;  $3s = 1km$ )
- Conduction: heat transfer by contact; Convection: heat transfer by circulation; Radiation: heat transfer by travel through space.
- Greenhouse effect: sun sends in short heat waves, ground absorbs them and re-emits them as longer heat waves, the longer waves can't get out of the atmosphere as easily,  $CO_2$  and  $H_2O$  vapour traps some of them, atmosphere heats up.
- Coriolis force is caused by Earth's rotation and causes winds to veer to the right in the Northern Hemisphere (to the left in S. Hem.) as they flow from H to L
- Precipitation: rain (millions of cloud droplets condense around a nuclei), sleet (frozen rain), hail (layers frozen on by circulating in a thundercloud)
- Dew forms when a surface (ground, cold glass) cools down causing the air to cool to the point that it can't hold as much water vapour as it is holding so the water condenses out onto the surface.
- Know your weather map symbols: wind speed and direction, fronts, pressure zones with isobars, precipitation types, air masses (mT, etc)
- Wind pattern of a non-rotating land free Earth (four convection cells with winds along surface going from poles to equator then up and around.)
- ~~The last question on the written section is to make up a question that wasn't on the test (and it must be on the oceans section plus you must correctly answer it)~~

**Study** your notes, questions and worksheets along with the above Review Points and you should do WELL on the test. You will do poorly if you don't invest the time to study!